



Hantavirus reservoir *oligoryzomys longicaudatus* spatial distribution sensitivity to climate change scenarios in Argentine Patagonia

Author(s): Carbajo AE, Vera C, González PLM
Year: 2009
Journal: International Journal of Health Geographics. 8 (1): 44

Abstract:

Background: *Oligoryzomys longicaudatus* (colilargo) is the rodent responsible for hantavirus pulmonary syndrome (HPS) in Argentine Patagonia. In past decades (1967–1998), trends of precipitation reduction and surface air temperature increase have been observed in western Patagonia. We explore how the potential distribution of the hantavirus reservoir would change under different climate change scenarios based on the observed trends. **Methods:** Four scenarios of potential climate change were constructed using temperature and precipitation changes observed in Argentine Patagonia between 1967 and 1998: Scenario 1 assumed no change in precipitation but a temperature trend as observed; scenario 2 assumed no changes in temperature but a precipitation trend as observed; Scenario 3 included changes in both temperature and precipitation trends as observed; Scenario 4 assumed changes in both temperature and precipitation trends as observed but doubled. We used a validated spatial distribution model of *O. longicaudatus* as a function of temperature and precipitation. From the model probability of the rodent presence was calculated for each scenario. **Results:** If changes in precipitation follow previous trends, the probability of the colilargo presence would fall in the HPS transmission zone of northern Patagonia. If temperature and precipitation trends remain at current levels for 60 years or double in the future 30 years, the probability of the rodent presence and the associated total area of potential distribution would diminish throughout Patagonia; the areas of potential distribution for colilargos would shift eastwards. These results suggest that future changes in Patagonia climate may lower transmission risk through a reduction in the potential distribution of the rodent reservoir. **Conclusion:** According to our model the rates of temperature and precipitation changes observed between 1967 and 1998 may produce significant changes in the rodent distribution in an equivalent period of time only in certain areas. Given that changes maintain for 60 years or double in 30 years, the hantavirus reservoir *Oligoryzomys longicaudatus* may contract its distribution in Argentine Patagonia extensively.

Source: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2721831>

Resource Description

Climate Scenario : ☒

specification of climate scenario (set of assumptions about future states related to climate)

Other Climate Scenario

Other Climate Scenario: author defined scenarios

Early Warning System: ☒

Climate Change and Human Health Literature Portal

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

Exposure :

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Precipitation, Temperature

Temperature: Fluctuations

Geographic Feature:

resource focuses on specific type of geography

Mountain

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Central/South America

Health Impact:

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Zoonotic Disease

Zoonotic Disease: Hantavirus Pulmonary Syndrome

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology:

type of model used or methodology development is a focus of resource

Exposure Change Prediction

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Long-Term (>50 years)

Vulnerability/Impact Assessment:



resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content